

Satsuma Mandarin Marketing Research Projects

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Research Projects

- 1) How do Satsumas compare with its major competitors (clementines and tangerines)?
- 2) What is the optimum internal quality (flavor)?
- 3) What is the optimum external quality fruit (appearance)?
- 4) What do consumers want in packaging?

How do Satsumas compare with its major competitors (clementines and tangerines)?

- Study procedures:
 - In-store blind taste test
 - Grocery stores (Birmingham and Montgomery)
 - Bruno's (2) stores
 - Food World (3) stores
 - Food Fair (2) stores
- Sampling Dates: December 2 – December 18
- Fruit sampled:
 - 1) Alabama satsuma
 - 2) Store bought clementine (Spain)
 - 3) Store bought tangerine (Florida)
- Flavor components measured: Brix (sugars) and titratable acidity

Consumer Preference (96 consumers in the test)

- Satsumas 35%
- Clementines 19%
- Tangerines 44%

Internal Quality (flavor) of those that preferred Satsumas

Flavor Component	Satsuma	Clementine	Tangerine
Brix (%)	9.0 B	9.0 B	10.9 A
Acid (%)	0.61 B	0.58 B	0.85 A
Ratio (%)	15.2 A	16.6 A	13.3 B

Internal Quality (flavor) of those that preferred Clementine

Flavor Component	Satsuma	Clementine	Tangerine
Brix (%)	8.3 C	9.4 B	10.7 A
Acid (%)	0.53 B	0.62 B	0.87 A
Ratio (%)	15.9 B	16.6 B	12.7 A

Internal Quality (flavor) of those that preferred Tangerine

Flavor Component	Satsuma	Clementine	Tangerine
Brix (%)	8.9 B	9.1 B	11.1 A
Acid (%)	0.58 B	0.53 B	0.80 A
Ratio (%)	16.6 A	17.9 A	14.1 B

Conclusions

- 1) More consumers preferred Satsumas (35%) than Clementines (19%)
 - a) These consumers preferred Satsumas even when internal quality as measured by Brix and acid was the same.
 - b) Consumers seemed to prefer Clementines when internal quality was inferior to Satsumas.
- 2) More consumers preferred Tangerines than Satsumas (35%) and Clementines (19%)
 - a) These consumers preferred tart fruit
 - b) These consumers were mainly from low income stores and tart citrus is what they are used to.
- 3) To successfully market Satsumas:
 - a) Must target medium to high income stores or initiate an education (advertising) campaign
 - b) Must market fruit with high internal quality to compete successfully with Clementines

How to Compete?

- May need to look at more upscale stores where consumers are used to more variety!
- Tangerines suppliers have done a great job of marketing and instilling the Tangerine image
 - Initiate an education campaign
 - Free samples

What is the optimum internal quality (flavor)?

- 50 panelists from College of Agriculture involved in a blind-taste test
- Sampling Dates: October 11 – December 6
- Fruit Sampled: Alabama Satsuma
- Flavor Components Measured: Brix (sugars) and titratable acids



FRUIT CODE: 520 PANELIST: _____

VISUAL/COLOR

Extremely Dislike _____ Extremely Like _____

SWEETNESS

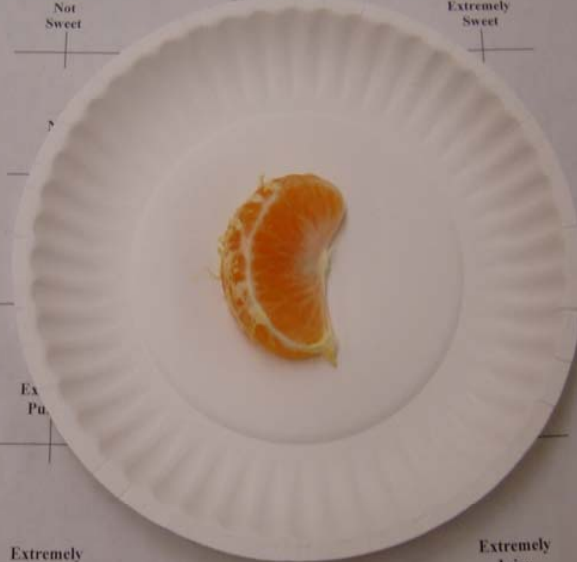
Not Sweet _____ Extremely Sweet _____

Ex _____ Pa _____

OVERALL QUALITY

Extremely Dry _____ Extremely Juicy _____

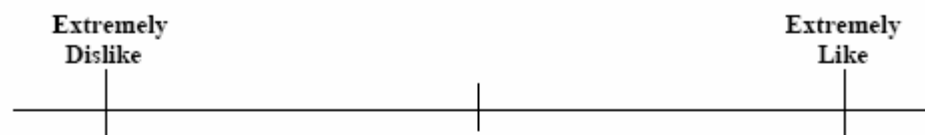
Extremely Dislike _____ Extremely Like _____



FRUIT CODE: _____

PANELIST: _____

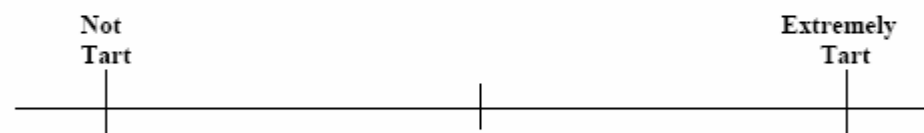
VISUAL COLOR



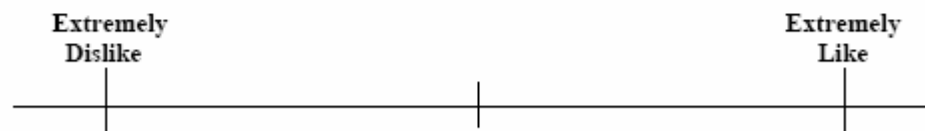
SWEETNESS



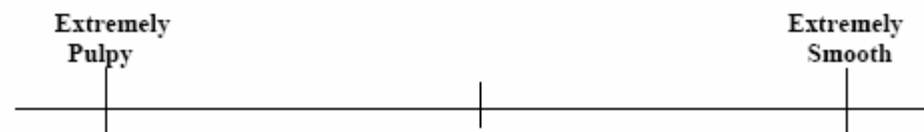
TARTNESS



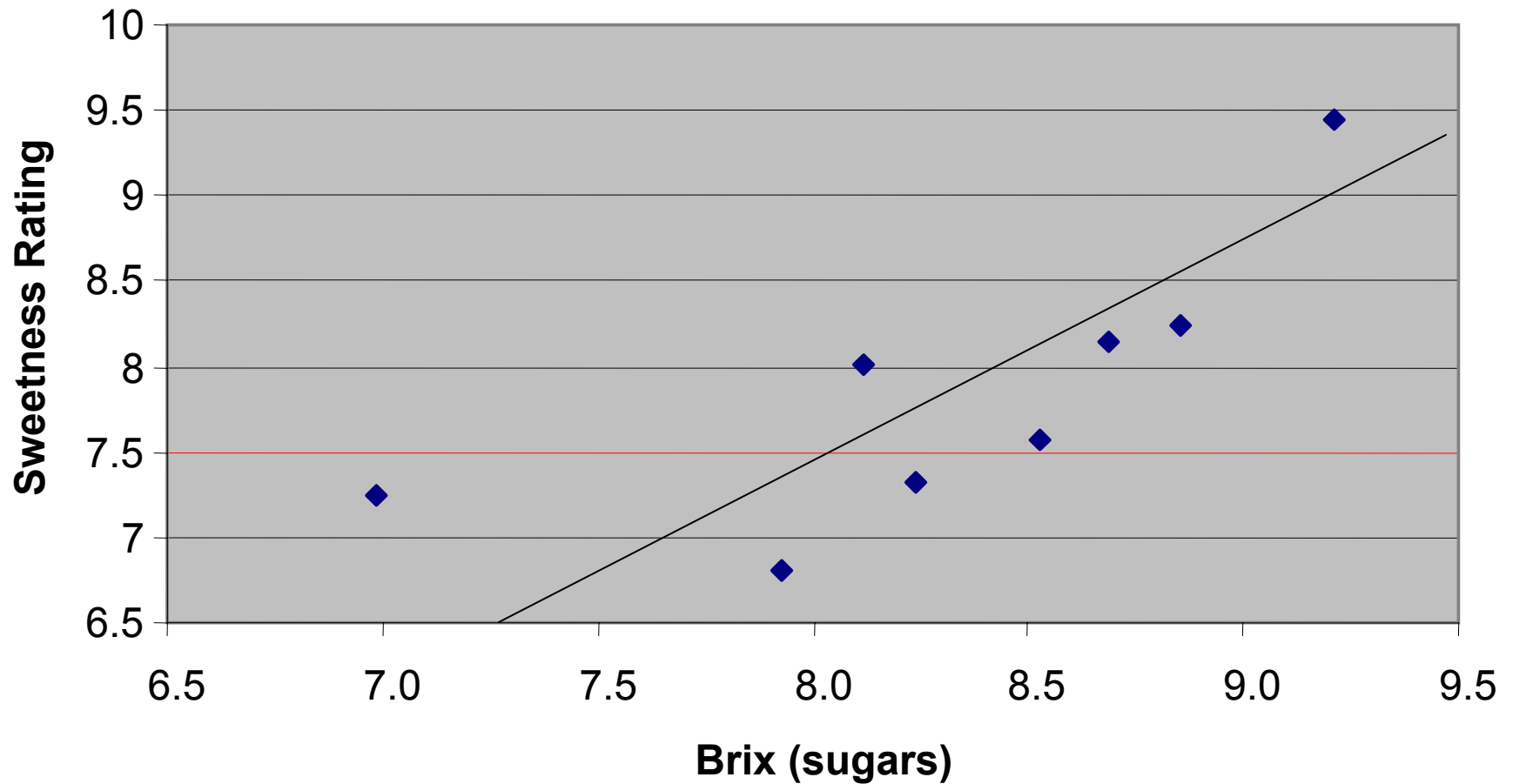
FLAVOR



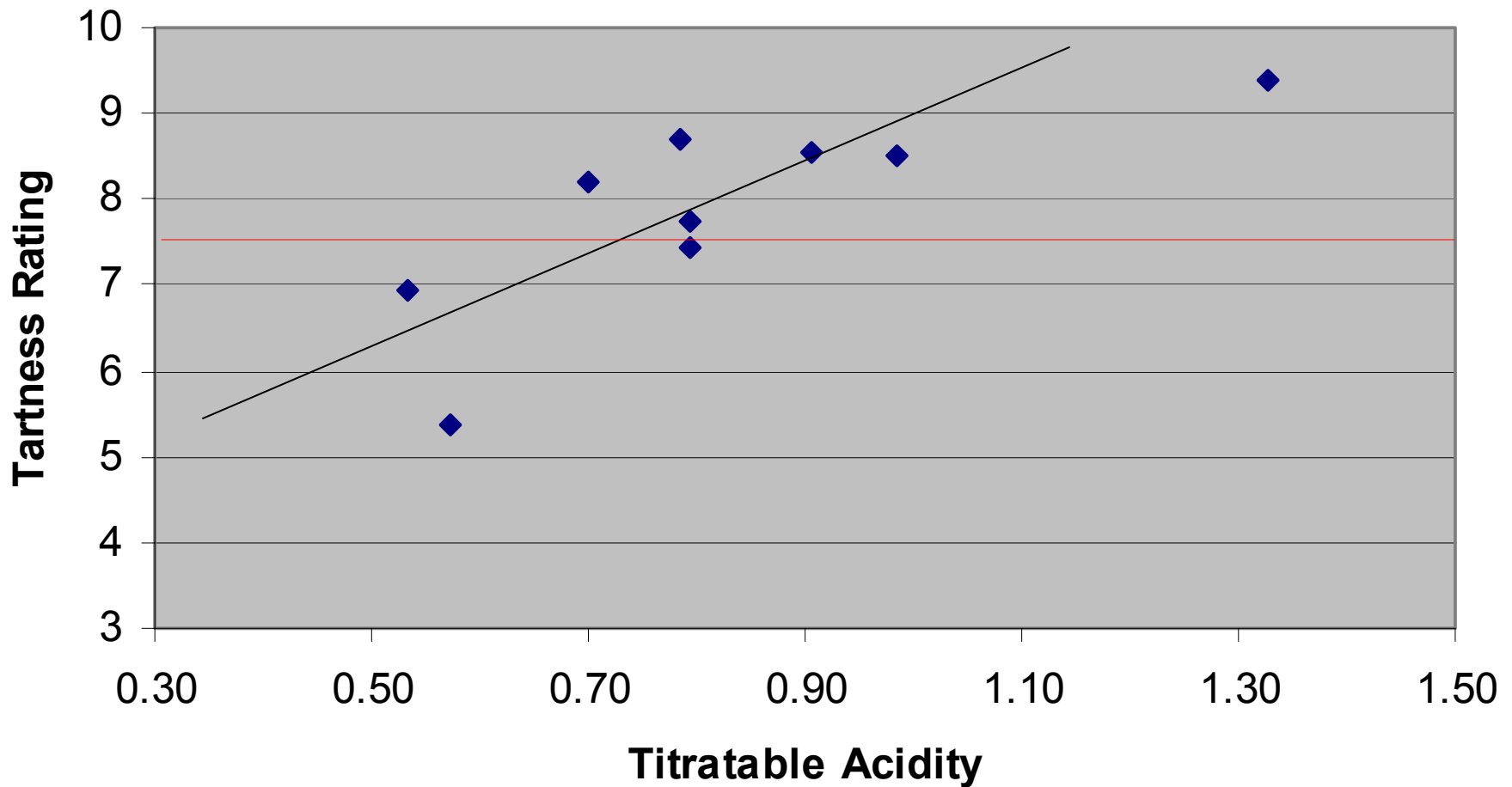
TEXTURE



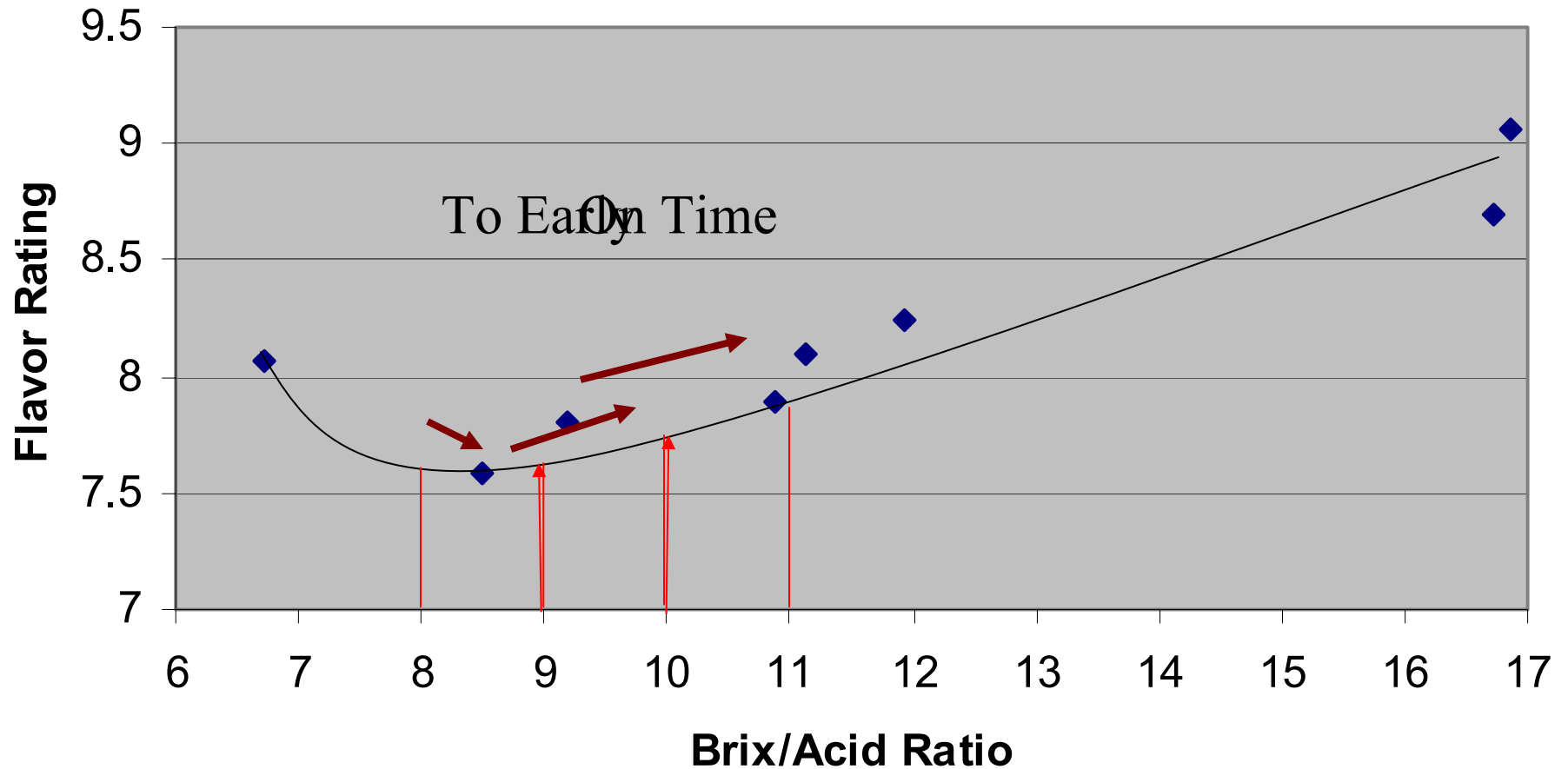
Sweetness Rating vs Brix



Tartness Rating vs Acid



Best Harvest Time



Flavor Findings

- As Brix increased, the average sweetness rating increased
- As Acids decreased, the average tartness rating decreased
- As Ratio increased above about 8.5, the average flavor rating increased

Results and Discussion

- 10:1 sugar-to-acid ratio seems to be the ratio where increased flavor rating becomes obvious
- As the ratio increases past 10:1, the flavor rating rises drastically

What is the optimum external quality
fruit (appearance)?



Vs.

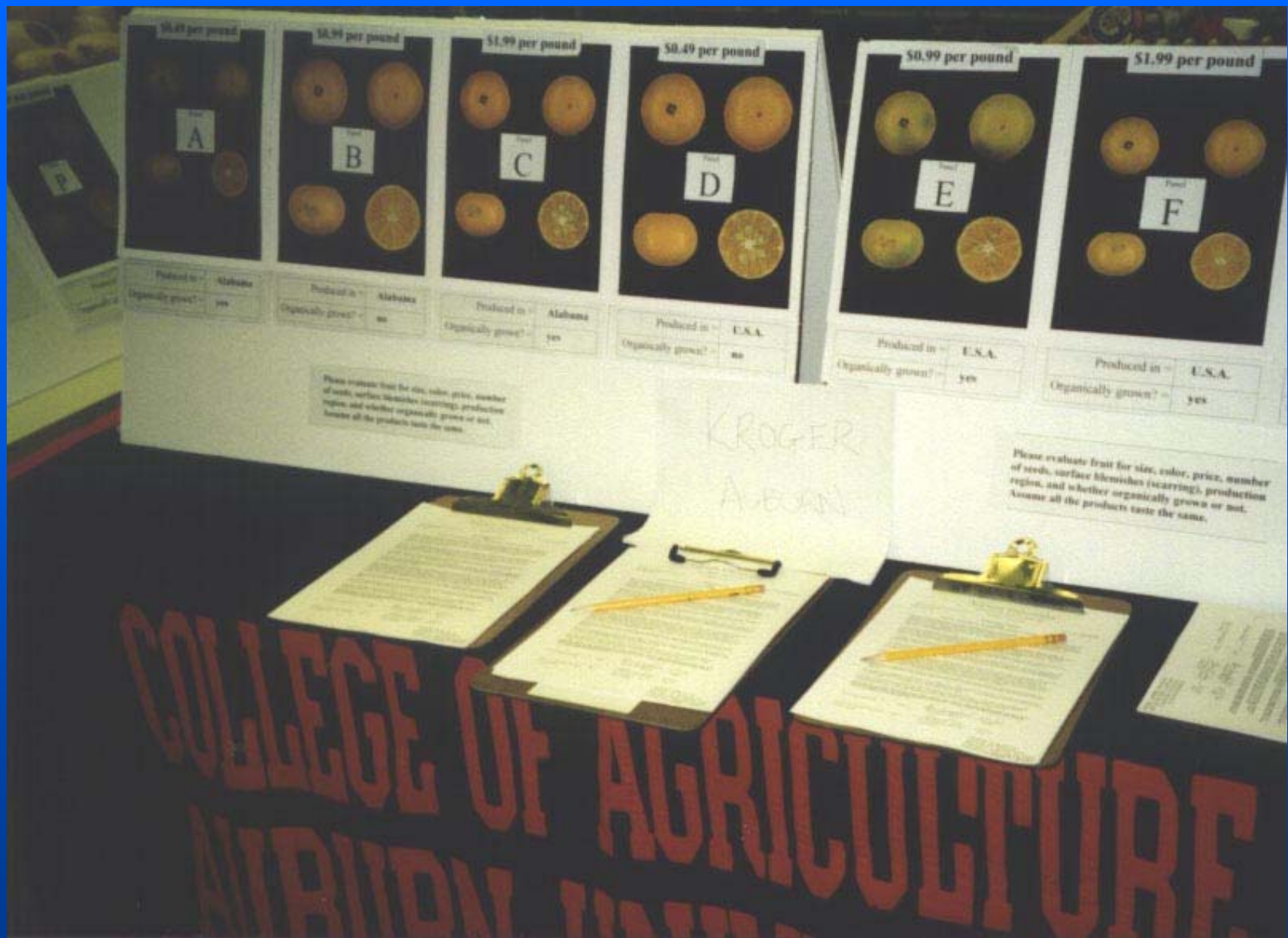


Vs.



Product Profiles

- Price
 - \$0.49 / Lb.
 - \$0.99 / Lb.
 - \$1.99 / Lb.
- Seediness
 - 0 Seeds
 - 3 Seeds
 - 7 Seeds
- Peel Color
 - Green-Yellow
 - Yellow-Orange
 - Orange
- Blemish Size
 - No Blemish
 - 0.75 in.
 - 1.14 in.
- Fruit Size
 - 2 in.
 - 2.5 in.
 - 3 in.
- Brand
 - Alabama
 - USA
- Organic
 - Yes
 - No



Panel A
\$6.49 per pound

Produced in - Alabama
Organically grown? - yes

Panel B
\$8.99 per pound

Produced in - Alabama
Organically grown? - no

Panel C
\$1.99 per pound

Produced in - Alabama
Organically grown? - yes

Panel D
\$8.49 per pound

Produced in - U.S.A.
Organically grown? - no

Panel E
\$8.99 per pound

Produced in - U.S.A.
Organically grown? - yes

Panel F
\$1.99 per pound

Produced in - U.S.A.
Organically grown? - yes

Please evaluate fruit for size, color, price, number of seeds, surface blemishes (scarring), production region, and whether organically grown or not. Assume all the products taste the same.

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KROGER
ALBANY

COLLEGE OF AGRICULTURE
ALBANY

Sampling Procedure

Stores:	Kroger	Piggly Wiggly
	Bruno's	Food World
	FoodMax	

Cities: AL:	Auburn	Birmingham
	Gadsden	Huntsville
	Mobile	Montgomery

GA:	Albany	Macon
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Total number of respondents: 605

Percent of buying decision for individual attributes

1) Seeds	22.7%
2) Price	16.6%
3) Blemish	16.6%
4) Color	15.8%
5) Size	13.9%
6) Organic	7.5%
7) Brand	6.9%

100%

Breakdown of respondents into categories by major attribute preference

Percent of buying decision for individual attributes			
Attribute	No Seed	Price	Blemish/Color
Price	13%	31%	13%
Size	14%	13%	13%
Color	13%	13%	20%
Seediness	35%	16%	13%
Blemish Area	12%	11%	25%
Production Region	7%	8%	7%
Type of Production	7%	9%	8%
Total	100%	100%	100%

Results

- No Seed Categories
 - More likely to purchase at a grocery store than roadside stand or farmer's market
 - Have higher income
 - More likely to be white
 - More likely to purchase for a special occasion

Conclusion: These people are willing to pay for the convenience of no seeds

Results

- Price Sensitive Category

- More likely to shop at places other than a grocery store (Roadside stand, farmers market)
- The older the person, the more likely to be in this group
- Lower education

Conclusion: Willing to pay give up external quality for a lower price

Results

- Blemish/Color Category

- Prefer blemish-free, degreened citrus
- Increased age: the older the person, the more likely to be in this group
- Non-white
- Lower income
- Female

Conclusion: Want fruit that have the typical characteristics found in a grocery store

Marketing Implications

- The two segments that are most likely to shop at the grocery store really want non-blemished orange fruit of a larger size
- So,
 - Maintain quality in post-harvest to minimize external damage
 - De-green fruit to obtain orange fruit
 - Send larger fruit to grocery stores

What do consumers want in packaging?



Product Profiles

- Price
 - \$0.99 / Lb.
 - \$1.99 / Lb.
 - \$6.99 / Lb.
- Type of mandarin
 - Satsuma
 - Tangerine
 - Clementine
- Vitamin C label
 - High in Vitamin C
 - No label
- Package type
 - Loose
 - 3-lb bag
 - 5-lb box
 - Value added package
- Shelf-life
 - 3 days
 - 14 days
 - 31 days

Percent of buying decision for individual attributes

1) Package	32%
2) Price	24%
3) Shelf-life	21%
4) Fruit Type	16%
5) Vitamin C on label	8%
	<hr/>
	100%

Breakdown of respondents into categories by major attribute preference

Product	No single Attribute preference (46%)	Price and package type (27%)	Package type (16%)	Price and shelf life (10%)
Price	24	28	16	28
Package Type	27	33	50	20
Type of Fruit	20	14	11	14
Shelf Life	22	18	14	30
Vitamin C Label	8	7	8	7

No single attribute preference category

- 46% of respondents
- Price, Package type, Type of fruit, shelf-life:
 - weigh all attributes and make a decision
- Demographics:
 - Purchase a lot of citrus
 - Lower education
 - Lower income
 - Increased family size

Price and Package type category

- Extremely like the “value-added” product
 - As expected, this segment tended to have higher incomes
 - Higher incomes allow consumers to shop for convenience items

Package type category

- Extremely liked the loose package type
- Liked the Tangerine but positive toward satsuma
- Demographics:
 - Had heard of and tasted a satsuma
 - Increased age

Price and shelf-life category

- Really liked fruit with longer shelf life
 - Probably because purchase citrus fewer times per month
- Positive toward both loose and bagged fruit
- Demographics:
 - Increased education
 - Increased single family household

Recommendations for optimizing sale of Satsuma Mandarins in the retail chain stores

- Market in higher income stores
 - More likely to prefer Satsuma taste than lower income stores
- Within higher income stores, package as loose or value-added product
- Loose fruit should be large (2.5-3 in.), non-blemished, and orange

Questions?